TCT-752

Comparison of transcatheter aortic valve implantation versus surgical aortic valve replacement in a high-risk patient population : a propensity score analysis

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Background: Transcatheter aortic valve implantation (TAVI) has recently been advocated to decrease perioperative risk in high-risk patients. In this propensity-score analysis we compared outcomes after TAVI to those after surgical aortic valve replacement (AVR).
Methods: From June 2009 through June 2010, 82 consecutive patients underwent TAVI via a transapical (n=60) or transfemoral (n=22) approach using the EdwardsSAPIENTM prosthesis. Mean patient age was 81.9±5.2 years, 64.6% were females. Logistic EuroSCORE was 23.6±1.4% and STS score was 8.7±1.3%. A group of 82 patients after surgical AVR was retrieved from our database yielding a control group that was matched to the cases with respect to baseline demographics and typical risk factors.
Results: Overall mortality did not differ significantly between TAVI and AVR groups at 30 days (7.3% vs. 8.6%), 90 days (13.6% vs. 11.1%) or 180 days (17.8 vs. 18.9%, p=0.889). Conversion to surgery was necessary in 2 TAVI cases (2.4%). Perioperative stroke occurred in 2 cases per group (2.4%). Pacemakers were implanted for new-onset heart-block in 3.7% and 2.4% in the TAVI and AVR group respectively (p=1.0). TAVI resulted in shorter operative times (p<0.001), shorter ventilation times (p<0.001) and shorter length of stay in the intensive care unit (p=0.008). Duration of hospital stay however was not significantly different (p=0.11).
Conclusion: In our experience, mortality rates are similar after both types of procedure. Patients receiving TAVI benefit from faster postoperative recovery. Until more clinical data become available, the optimal procedure has to be determined for each patient according to individual risk factors.

TCT-753

In-Hospital Complications After Transcatheter Aortic Valve Implantation Revisited According To The Valve Academic Research Consortium Definitions

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Background: : The absence of uniformity in endpoint definitions challenges the comparison between previously reported major adverse cerebro- and cardiovascular event rates after Transcatheter Aortic Valve Implantation (TAVI). To address this, in 2009 the Valve Academic Research Consortium (VARC) was established aiming to provide standardized endpoint definitions for TAVI clinical trials. In this study, we sought to determine the occurrence of in-hospital complications after TAVI according to the VARC criteria in addition to the Length of Stay (LOS).
Methods: Between November 2005 and September 2010, we prospectively enrolled 150 consecutive patients who underwent TAVI with the Medtronic CoreValve System in our institution. Complications, prosthetic valve associated endpoints and therapy-specific endpoints were defined according to the definitions provided by the VARC.
Results: The mean age (±SD) was 81 (±7) years and 55% were female. Thirty day or in-hospital mortality was 11% and the 30-day combined safety endpoint was 22%. Seventy-six patients (51%) had ≥1 cardiovascular and/or non-cardiovascular complication of whom 16 also underwent a new permanent pacemaker implantation (PPI). In the 74 patients with uneventful TAVI, 12 patients (8%) underwent PPI. TAVI was truly uneventful in 62 patients (41%). Bleeding complications were observed most frequently (31%), followed by acute kidney injury (18%), vascular complications (16%) and stroke/ TIA (11%). The median LOS in patients with a complicated and a truly uncomplicated TAVI was 14.0 (8.0-20.5) and 8.0 (7.0-10.8) days, respectively (p<0.001).
Conclusion: TAVI was associated with ≥1 cardiovascular and/or non-cardiovascular event in 51% of the patients; new PPI was needed in another 8% and TAVI was truly uncomplicated in 41%. Complications and need for new PPI significantly prolonged LOS.

TCT-754

B-Type Natriuretic Peptide Predicts Improvement of Left Ventricular Function and Clinical Outcome After Balloon Aortic Valvuloplasty

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Background: Percutaneous balloon aortic valvuloplasty (PBAV) is a therapeutic option for patients with aortic stenosis and poor left ventricular ejection fraction (LVEF). B-Type natriuretic peptide (BNP) predicts outcome of patients treated by aortic valve replacement.
Methods: Among 155 consecutive patients treated in our institution by PBAV, 60 had a LVEF < 40% and underwent an echocardiography at 1 month. A significant improvement of LVEF was defined as an increase of at least 10% of LVEF at 30 days. BNP was measured before and 24 hours after PBAV.
Results: In our 60 patients (39 males, 83 ± 7 years, logistic Euroscore 46 ± 22%), aortic valve area increased from 0.5 ± 0.2 to 0.9 ± 0.3 cm squarre and the mean gradient decreased from 31 ± 14 to 16 ± 9 mmHg (p<0.0001 for both) after PBAV. BNP plasma levels decreased from 2017 ± 1332 to 1561 ± 1097 pg/ml (p=0.001) at 24 hours. A significant improvement of LVEF was observed in 48% of patients (group 1, N=29) from 27 ± 6 % to 45 ± 6 % (p<0.0001) and remained unchanged among 31 other patients (group 2) from 28 ± 8 % to 28 ± 11 % (p=NS). Although clinical data, LVEF (27 ± 6 vs 28 ± 8; p=0.32) and BNP plasma levels (1861 ± 1067 vs 2201 ± 1665; p=0.24) were similar at baseline between group 1 and 2 respectively, a significant reduction of BNP at 24 hours was only observed in group 1 (-711 ± 604 in group 1 vs +43 ± 742 in group 2; p=0.004). By multivariate analysis, BNP reduction > 300 pg/ml was independant predictor of LVEF improvement at 30 days (hazard ratio : 2.825; 95% confidence interval : 1.225-6.513; p = 0.01). Kaplan-Meier analysis showed that 1-year survival after PBAV was significantly higher in group 1 than in group 2 patients (87 ± 7 vs 48 ± 11 %; p=0.002).
Conclusion: Reduction of BNP 24 hours after PBAV is a strong predictor of LVEF improvement at 30-day. Survival at 1 year was significantly higher in patients with such an improved LVEF after PBAV.

TCT-755

Surgical vs. Transcatheter Aortic Valve Replacement with the Sapien XT Valve and NovoFlex Delivery System in High-risk patients with Severe Aortic Stenosis

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Background: Data from Cohort A of the PARTNER trial demonstrated that transcatheter and surgical aortic-valve replacement (AVR) were associated with different periprocedural risks but similar survival rates at 1-year. However, this study was performed with the earlier version of the transcatheter device in centers with no previous experience with the procedure. There are limited data comparing the latest generation Edwards SapienXT prosthesis and Novaflex delivery system (Edwards Lifesciences, Irvine, California) which require larger size arterial sheaths.
Methods: We identified 60 consecutive patients who underwent transcatheter AVR (TAVR) with the SapienXT THV via the transfemoral route between April 2010-January 2011. We then utilized propensity score matching to identify 60 high-risk historical case controls who underwent surgical AVR (SAVR) between August 2003-July 2008. Valve Academic Research Consortium (VARC) definitions were applied for endpoint adjudication in both groups.
Results: The TAVR and SAVR were well matched for baseline clinical characteristics, including EuroScore (10.4±2.9 vs. 10.8±2.5; p=0.38) and STS score (5.7±5.3 vs. 5.5±3.1; p=0.76). Vascular complications were more common in the TAVR group (25% vs. 1.7%; p<0.001). SAVR was associated with a higher rate of VARC-defined bleeding 80% with 58.3%; p=0.1), blood transfusion (58.3% vs. 31.7%; p=0.003), and number of blood units transfused (2.3±3.4 vs. 1.1±2.0; p=0.02). Similarly, acute kidney injury (58.3% vs. 28.3%); p=0.001) and periprocedural TIA (11.7% vs. 1.7%;p=0.03) were more frequent with SAVR. Although in-hospital stroke (3.3% vs. 1.7%) and mortality (6.7% vs. 3.3%) were numerically higher after SAVR, these differences were not statistically different (p>0.05). The average length of stay was longer after SAVR (9.9±9.6 vs. 7.0±5.9 days; p=0.05).
Conclusion: In this retrospective case-control study of real-world patients undergoing transcatheter and surgical AVR, these procedures were associated with different periprocedural risks. These data mirror those of the PARTNER trial, except for a lower risk of TIA and acute kidney injury with TAVR. Longer follow-up data will be presented at TCT 2011.

TCT-756

The Effects of Pre-existing Significant Coronary Artery Disease Defined by QCA Analysis Upon Outcome After Transcatheter Aortic Valve Implantation Using the Edwards Bioprosthesis

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Background: Patients undergoing surgical aortic valve replacement (sAVR) routinely undergo simultaneous coronary artery bypass grafting (CABG) for significant coronary artery disease (CAD) due to adverse prognostic impact. Whilst manufacturers advise percutaneous intervention (PCI) to significant CAD prior to transcatheter aortic valve implantation (TAVI) there is considerable variation amongst operators. We sought to analyse the impact of CAD in our centre's patients.
Methods: We performed a retrospective analysis of 164 patients who underwent TAVI using the Edwards bioprosthesis from March 2008 to October 2010. 6 angiograms were not available for analysis. Patients were classified using pre-TAVI quantitative

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